GS1-128

GS1-128 is an application standard of the GS1 implementation using the Code 128 barcode specification. The former correct name was UCC/EAN-128. Other no longer used names have included UCC-128 and EAN-128. The GS1-128 standard was introduced in 1989 [1] and uses a series of Application Identifiers to include additional data such as best before dates, batch numbers, quantities, weights and many other attributes needed by the user.

Example GS1-128

Overview

The GS1-128 standard is an application standard within the Code 128 barcode. It identifies data with Application Identifiers (AI). Without spaces below, a simple SSCC (Serial Shipping Container Code) barcode would look something like this:

```
[FNC1] 00 12345678 0000000001
```

In the example above, *[FNC1]* is the single character *Function Code 1*, which specifies that a Code 128 barcode is a GS1-128 code. *00* is the serial shipping container code ("SSCC") AI that designates the following data as a serial shipping container code. *12345678* is the company number. *0000000001* is the container number.

It is possible to encode several pieces of data in one barcode. For example, a product serial number (application identifier code 21), production date (code 11), and expiration date (code 17) together would look something like this:

```
[FNC1] 21 12345 [FNC1] 11 090101 17 100101
```

An additional FNC1 is required before the production date, because the preceding product serial number is variable length. This is not required before the expiration date, because the production date is fixed length. Reordering the components to place a variable-length field last produces a more compact form:

```
[FNC1] 11 090101 17 100101 21 12345
```

Mapping to EPC codes

As EPC and EAN respectively UCC as code systems are not congruent, GS1-128 gets mapped to EPC-*GTIN* with a reference list including both codes per type of product. However, there is no mapping for the serial number with EPC-*SGTIN*.

Full list of Application Identifiers

This list is from 2003 and therefore out of date and possibly incorrect. Also this is copyrighted by GS1 – for the up to date list please see the link below for the GS1 General Specifications[2] Because code 128 is more efficient at coding pairs of digits, preference is given to even lengths in numeric fields.

All dates are formatted as YYMMDD.

y in the AI gives a number of decimal places in the following value. The represented value is the following integer divided by 10^y. For example, a net weight of 22.7 kg could be coded as 3101 000227, 3102 002270, 3103 022700, or 3104 227000.

Code	Description	data length (without AI)
00	Serial Shipping Container Code (SSCC)	18
01	Global Trade Item Number (GTIN)	14
02	GTIN of Contained Trade Items	14
10	Batch/Lot Number	variable, up to 20
11	Production Date	6
12	Due Date	6
13	Packaging Date	6
15	Best Before Date (YYMMDD)	6
17	Expiration Date	6
20	Product Variant	2
21	Serial Number	variable, up to 20
22	Secondary Data Fields	variable, up to 29
23n	Lot number *n*	variable, up to 19
240	Additional Product Identification	variable, up to 30
241	Customer Part Number	variable, up to 30
242	Made-to-Order Variation Number	variable, up to 6
243	Packaging component number	variable, up to 20
250	Secondary Serial Number	variable, up to 30
251	Reference to Source Entity	variable, up to 30
253	Global Document Type Identifier	variable, 13–17
254	GLN Extension Component	variable, up to 20
255	Global Coupon Number (GCN)	variable, 13–25
30	Count of items	variable, up to 8
310y	Product Net Weight in kg	6
311y	Product Length/1st Dimension, in meters	6
312y	Product Width/Diameter/2nd Dimension, in meters	6
313y	Product Depth/Thickness/Height/3rd Dimension, in meters	6
314y	Product Area, in square meters	6
315y	Product Net Volume, in liters	6
316y	Product Net Volume, in cubic meters	6
320y	Product Net Weight, in pounds	6
321y	Product Length/1st Dimension, in inches	6
322y	Product Length/1st Dimension, in feet	6
323y	Product Length/1st Dimension, in yards	6
324y	Product Width/Diameter/2nd Dimension, in inches	6
325y	Product Width/Diameter/2nd Dimension, in feet	6
326y	Product Width/Diameter/2nd Dimension, in yards	6
327y	Product Depth/Thickness/Height/3rd Dimension, in inches	6

328y	Product Depth/Thickness/Height/3rd Dimension, in feet	6
329y	Product Depth/Thickness/3rd Dimension, in yards	6
330y	Container Gross Weight (kg)	6
331y	Container Length/1st Dimension (Meters)	6
332y	Container Width/Diameter/2nd Dimension (Meters)	6
333y	Container Depth/Thickness/3rd Dimension (Meters)	6
334y	Container Area (Square Meters)	6
335y	Container Gross Volume (Liters)	6
336y	Container Gross Volume (Cubic Meters)	6
340y	Container Gross Weight (Pounds)	6
341y	Container Length/1st Dimension, in inches	6
342y	Container Length/1st Dimension, in feet	6
343y	Container Length/1st Dimension in, in yards	6
344y	Container Width/Diameter/2nd Dimension, in inches	6
345y	Container Width/Diameter/2nd Dimension, in feet	6
346y	Container Width/Diameter/2nd Dimension, in yards	6
347y	Container Depth/Thickness/Height/3rd Dimension, in inches	6
348y	Container Depth/Thickness/Height/3rd Dimension, in feet	6
349y	Container Depth/Thickness/Height/3rd Dimension, in yards	6
350y	Product Area (Square Inches)	6
351y	Product Area (Square Feet)	6
352y	Product Area (Square Yards)	6
353y	Container Area (Square Inches)	6
354y	Container Area (Square Feet)	6
355y	Container Area (Square Yards)	6
356y	Net Weight (Troy Ounces)	6
357y	Net Weight/Volume (Ounces)	6
360y	Product Volume (Quarts)	6
361y	Product Volume (Gallons)	6
362y	Container Gross Volume (Quarts)	6
363y	Container Gross Volume (U.S. Gallons)	6
364y	Product Volume (Cubic Inches)	6
365y	Product Volume (Cubic Feet)	6
366y	Product Volume (Cubic Yards)	6
367y	Container Gross Volume (Cubic Inches)	6
368y	Container Gross Volume (Cubic Feet)	6
369y	Container Gross Volume (Cubic Yards)	6
37	Number of Units Contained	variable, up to 8
390y	Amount payable (local currency)	variable, up to 15
391y	Amount payable (with ISO currency code)	variable, 3–18

392y	Amount payable per single item (local currency)	variable, up to 15
393y	Amount payable per single item (with ISO currency code)	variable, 3–18
400	Customer Purchase Order Number	variable, up to 30
401	Consignment Number	variable, up to 30
402	Bill of Lading number	17
403	Routing code	variable, up to 30
410	Ship To/Deliver To Location Code (Global Location Number)	13
411	Bill To/Invoice Location Code (Global Location Number)	13
412	Purchase From Location Code (Global Location Number)	13
413	Ship for, Deliver for, or Forward to Location Code (Global Location Number)	13
414	Identification of a physical location (Global Location Number)	13
420	Ship To/Deliver To Postal Code (Single Postal Authority)	variable, up to 20
421	Ship To/Deliver To Postal Code (with ISO country code)	variable, 3–15
422	Country of Origin (ISO country code)	3
423	Country or countries of initial processing	variable, 3–15
424	Country of processing	3
425	Country of disassembly	3
426	Country of full process chain	3
7001	NATO Stock Number (NSN)	13
7002	UN/ECE Meat Carcasses and cuts classification	variable, up to 30
7003	expiration date and time	10
7004	Active Potency	variable, up to 4
703n	Processor approval (with ISO country code); *n* indicates sequence number of several processors	variable, 3–30
8001	Roll Products: Width/Length/Core Diameter/Direction/Splices	14
8002	Mobile phone identifier	variable, up to 20
8003	Global Returnable Asset Identifier	variable, 14–30
8004	Global Individual Asset Identifier	variable, up to 30
8005	Price per Unit of Measure	6
8006	identification of the components of an item	18
8007	International Bank Account Number	variable, up to 30
8008	Date/time of production	variable, 8–12
8018	Global Service Relationship Number	18
8020	Payment slip reference number	variable, up to 25
8100	Coupon Extended Code: Number System and Offer	6
8101	Coupon Extended Code: Number System, Offer, End of Offer	10
8102	Coupon Extended Code: Number System preceded by 0	2
8110	Coupon code ID (North America)	variable, up to 30
8200	Extended Packaging URL	variable, up to 70
90	Mutually Agreed Between Trading Partners	variable, up to 30
91–	Internal Company Codes	variable, up to 90

99		

References

1. "GS1 Historic Timeline" (http://40.gs1.org/historic-timeline.php). *GS1*. Retrieved 9 October 2018.
2. *General specifications* (http://www.gs1.org/docs/barcodes/GS1_General_Specifications.pdf) (PDF), GS1.

External links

- Informational site for GS1-128 symbology (https://web.archive.org/web/20110901211015/http://www.gs1-128.info/)